



**UNITED STATES DEPARTMENT OF COMMERCE**  
**Patent and Trademark Office**

Address: COMMISSIONER OF PATENTS AND TRADEMARKS  
Washington, D.C. 20231

*Handwritten signature*

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
-----------------	-------------	----------------------	---------------------

09/089,698 06/03/98 SPITZ

D LE9-97-123

┌

MMC2/0504

└

EXAMINER

JOHN J MCARDLE JR  
LEXMARK INTERNATIONAL INCORPORATED  
INTELLECTUAL PROPERTY DEPARTMENT  
740 NEW CIRCLE ROAD NW  
LEXINGTON KY 40550

BROOKE, M

ART UNIT

PAPER NUMBER

2853

DATE MAILED:

05/04/00

**Please find below and/or attached an Office communication concerning this application or proceeding.**

**Commissioner of Patents and Trademarks**

# Office Action Summary

Application No.

09/089,698

Applicant(s)

SPITZ ET AL.

Examiner

Michael S. Brooke

Art Unit

2853

-- **Th MAILING DATE of this communication appears on the cover sheet with the correspondenc address --**  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).

## Status

- 1) ☒ Responsive to communication(s) filed on 27 March 2000.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-22 and 25-39 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-22 and 25-39 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claims \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are objected to by the Examiner.
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. § 119

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).
- a) ☐ All b) ☐ Some \* c) ☐ None of the CERTIFIED copies of the priority documents have been:
1. ☐ received.
2. ☐ received in Application No. (Series Code / Serial Number) \_\_\_\_\_.
3. ☐ received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. & 119(e).

## Attachment(s)

- 14) ☒ Notice of References Cited (PTO-892)
- 15) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 16) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_
- 17) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 18) ☐ Notice of Informal Patent Application (PTO-152)
- 19) ☐ Other: \_\_\_\_\_

Art Unit: 2853

## **DETAILED ACTION**

### ***Drawings***

1. This application has been filed with informal drawings which are acceptable for examination purposes only. Formal drawings will be required when the application is allowed.
2. The drawings are objected to under 37 CFR 1.83(a) because they fail to show "a TAB circuit" as described on page 12, lines 28-29 of the specification. Any structural detail that is essential for a proper understanding of the disclosed invention should be shown in the drawing. MPEP ' 608.02(d). Correction is required.
3. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the "TAB circuit" must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

### ***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Art Unit: 2853

5. Claims 1, 4-7 and 10-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wong in view of Hara et al. and Wenzel et al.

Wong discloses an ink jet print head comprising a substrate support panel (50) having a recess (48) for accommodating and cooling a semi-conductor substrate (12). As can be seen in Fig. 8, the support panel has a top surface and side walls which define a cylindrical first opening (100) which is located opposite the top surface. Plastic alignment pins are provided adjacent the side walls for attaching the panel to holes in a plastic ink cartridge (10) which is positioned adjacent to the support panel. As can be seen in Fig. 4, holes are provided in the cartridge which mate with the alignment pins for the purpose of securing the support panel to the ink cartridge. Alignment pins (98) which have a rectangular pyramid shape with a rectangular base are provided for the purpose of aligning the panel with a printer. Wong further discloses the use of a TAB circuit (136) which is connected to the substrate and top surface of the carrier.

Wong discloses the claimed invention with the exception of the side walls having fins, the ink container being formed integrally with the substrate holder, a coating of silicon dioxide, the silicon dioxide having a thickness of between 0.1 to 2.5 microns, and the coating of polyxylylene, the polyxylylene coating having a thickness of about 0.1 to 10 microns.

Hara et al. discloses an ink jet print head containing a heating resistor (142) mounted on a substrate. A heat discharging fin (148) is located on a side of the print

Art Unit: 2853

head for the purpose of convectively removing heat from the print head which was generated by the heating resistor (col. 35, lines 39-57).

Wenzel et al. discloses an ink jet print head having a coating of polyxylylene with a thickness of between 0.5 and 5 microns for the purpose of forming a corrosion resistant layer. This would have suggested to one of ordinary skill in the art that any part of the print head which may come into contact with the ink could be coated with polyxylylene for the purpose of providing corrosion resistance. Furthermore, it is well known in the semiconductor art to use silicon dioxide as a corrosion resistant layer. Therefore it would have been obvious that silicon dioxide could be applied to the substrate holder for the purpose of providing corrosion resistance.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have formed the ink reservoir integrally with the substrate holder, since it has been held that forming in one piece an article which has formerly been formed in two pieces and put together requires only routine skill in the art (Howard v. Detroit Stove Works, 150 U.S. 164 (1893)).

Claims 2 and 3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wong in view of Hara et al., as applied to claims 1, 4-7 and 10-12 above, and further in view of Fukuda et al.

Wong, as modified by Hara et al. and Wenzel et al., discloses the claimed invention with the exception of the substrate holder comprising a metal selected from

Art Unit: 2853

the group consisting of aluminum, beryllium, copper, gold, silver, zinc, tungsten and alloys of two or more of the foregoing metals.

Fukuda et al. discloses an ink jet print head comprising a heat sink (1) made of aluminum for the purpose of cooling a heat generating substrate (10) (col. 6, lines 10-18).

Therefore, it have been obvious to one having ordinary skill in the art at the time the invention was made to have provided in Wong a substrate holder comprising a metal selected from the group consisting of aluminum, beryllium, copper, gold, silver, zinc, tungsten and alloys of two or more of the foregoing metals for the purpose of cooling a heat generating substrate.

6. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Wong in view of Hara et al., as applied to claims 1, 4, 5 and 10-12 above, and further in view of Drake et al.

Wong, as modified by Hara et al., discloses the claimed invention with the exception of the substrate holder comprising a material containing carbon fibers or graphite.

Drake et al. discloses a semi-conductor substrate having a heat sink (12.1) made of graphite for the purpose of cooling the substrate (col., 5, lines 16-18).

Therefore, it have been obvious to one having ordinary skill in the art at the time the invention was made to have provided in Wong a substrate holder comprising graphite for the purpose of cooling the substrate.

Art Unit: 2853

7. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Wong in view of Hara et al., as applied to claims 1, 4, 5 and 10-12 above, and further in view of Cook.

Wong, as modified by Hara et al., discloses the claimed invention with the exception of the substrate holder comprising a metal-ceramic composite.

Cook discloses a heat sink comprising a composite of a metal matrix and a ceramic for the purpose of improving the thermal conductivity of the heat sink so as to reduce its size.

It would have been recognized in the art of Wong that reducing the size of a heat sink would be desirable so as to reduce the overall size of the print head.

Therefore, it have been obvious to one having ordinary skill in the art at the time the invention was made to have provided in Wong a substrate holder comprising a metal-ceramic composite for the purpose improving the thermal conductivity of the substrate holder, so as to reduce the size of the print head.

8. Claims 14, 17, 18, 23 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wong in view of Hara et al., and Ta et al.

Wong discloses the invention, as discussed above, with the exception of the side walls having fins, the ink container being formed integrally with the substrate holder, a coating of silicon dioxide, the silicon dioxide having a thickness of between 0.1 to 2.5 microns, and one or more carriage positioning devices adjacent one of the side walls of the substrate holder.

Art Unit: 2853

Hara et al. and Ta et al. disclose the claimed invention as discussed above.

Therefore, it has been obvious to one having ordinary skill in the art at the time the invention was made to have provided in Wong side wall fins for convectively removing heat from the substrate and a coating of silicon dioxide having a thickness of between 0.1 to 2.5 microns for the purpose of providing thermal insulation as suggested by Hara et al., and one or more carriage positioning devices adjacent one of the side walls of the substrate holder for the purpose of preventing misalignment of the ink cartridge as taught by Ta et al.

9. Claims 15 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wong in view of Hara et al., Ta et al., as applied to claims 14, 17, 18 and 24 above, and further in view of Fukuda et al.

Wong, as modified by Hara et al., and Ta et al., discloses the claimed invention with the exception of the substrate holder comprising a metal selected from the group consisting of aluminum, beryllium, copper, gold, silver, zinc, tungsten and alloys of two or more of the foregoing metals.

Fukuda et al. discloses an ink jet print head comprising a heat sink (1) made of aluminum for the purpose of cooling a heat generating substrate (10) (col. 6, lines 10-18).

Therefore, it has been obvious to one having ordinary skill in the art at the time the invention was made to have provided in Wong a substrate holder comprising a metal selected from the group consisting of aluminum, beryllium, copper, gold, silver,



Art Unit: 2853

zinc, tungsten and alloys of two or more of the foregoing metals for the purpose of cooling a heat generating substrate.

10. Claims 19 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wong in view of Hara et al., and Ta et al., as applied to claims 14, 17, 18 and 24 above, and further in view of Wenzel et al.

Wong, as modified by Hara et al., and Ta et al., discloses the claimed invention with the exception of the coating of polyxylylene, the polyxylylene coating having a thickness of about 0.1 to 10 microns.

Wenzel et al. discloses an ink jet print head having a coating of polyxylylene with a thickness of between 0.5 and 5 microns for the purpose of forming a corrosion resistant layer.

Therefore, it have been obvious to one having ordinary skill in the art at the time the invention was made to have provided in Wong the polyxylylene coating having a thickness of about 0.1 to 10 microns for the purpose of forming a corrosion resistant layer as taught by Wenzel et al.

11. Claim 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over Wong in view of Hara et al. and Ta et al., as applied to claims 14, 17, 18 and 24 above, and further in view of Drake et al.

Wong, as modified by Hara et al. and Ta et al. discloses the claimed invention with the exception of the substrate holder comprising a material containing carbon fibers or graphite.

Art Unit: 2853

Drake et al. discloses a semi-conductor substrate having a heat sink (12.1) made of graphite for the purpose of cooling the substrate (col., 5, lines 16-18).

Therefore, it have been obvious to one having ordinary skill in the art at the time the invention was made to have provided in Wong a substrate holder comprising graphite for the purpose of cooling the substrate.

12. Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over Wong in view of Hara et al. and Ta et al., as applied to claims 14, 17, 18 and 24 above, and further in view of Cook.

Wong, as modified by Hara et al. and Ta et al., discloses the claimed invention with the exception of the substrate holder comprising a metal-ceramic composite.

Cook discloses a heat sink comprising a composite of a metal matrix and a ceramic for the purpose of improving the thermal conductivity of the heat sink so as to reduce its size.

It would have been recognized in the art of Wong that reducing the size of a heat sink would be desirable so as to reduce the overall size of the print head.

Therefore, it have been obvious to one having ordinary skill in the art at the time the invention was made to have provided in Wong a substrate holder comprising a metal-ceramic composite for the purpose improving the thermal conductivity of the substrate holder, so as to reduce the size of the print head.

13. Claims 25-28 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wong in view of Fukuda et al. and Ta et al.

Art Unit: 2853

Wong discloses the claimed invention with the exception of the substrate holder comprising a metal selected from the group consisting of aluminum, beryllium, copper, gold, silver, zinc, tungsten and alloys of two or more of the foregoing metals, one or more carriage positioning devices adjacent one of the side walls of the substrate holder, and a plurality of slots along the perimeter of the side walls.

Fukuda et al. and Keefe et al. discloses the features as discussed above.

It would have been obvious to one of ordinary skill in the art to provide the cylindrical first openings (100) around the perimeters of the side walls and the plastic alignment pins on the support panel, since it has been held that rearranging the parts of an invention involves only routine skill in the art.

Therefore, it have been obvious to one having ordinary skill in the art at the time the invention was made to have provided in Wong a substrate holder comprising a metal selected from the group consisting of aluminum, beryllium, copper, gold, silver, zinc, tungsten and alloys of two or more of the foregoing metals for the purpose of cooling a heat generating substrate as taught by Fukuda et al., and one or more carriage positioning devices adjacent one of the side walls of the substrate holder for the purpose of preventing misalignment of the ink cartridge as suggested by Ta et al.

14. Claims 29 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wong in view of Fukuda et al. and Ta et al., as applied to claims 25-28 and 31 above, and further in view of Wenzel et al.

Art Unit: 2853

Wong, as modified by Fukuda et al. and Ta et al., discloses the claimed invention with the exception of the coating of polyxylylene, the polyxylylene coating having a thickness of about 0.1 to 10 microns.

Wenzel et al. discloses an ink jet print head having a coating of polyxylylene with a thickness of between 0.5 and 5 microns for the purpose of forming a corrosion resistant layer.

Therefore, it have been obvious to one having ordinary skill in the art at the time the invention was made to have provided in Wong a polyxylylene coating having a thickness of about 0.1 to 10 microns for the purpose of forming a corrosion resistant layer as taught by Wenzel et al.

15. Claims 32, 38 and 39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wong in view of in view of Hara et al. and Keefe et al.

Wong discloses the claimed invention, as above, with the exception of at least one of sides of the substrate carrier having a substantially planar surface extending from the substrate surface essentially perpendicular there to for containing contact pads, and at least two of the four side containing cooling fins.

Hara et al. discloses the claimed invention as above. Furthermore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to provided additional cooling fins on different sides of the substrate carrier, since it has been held that mere duplication of the essential working parts of a device involves only routine skill in the art (St. Regis Paper Co. v. Bemis Co., 193 USPQ 8).

Art Unit: 2853

Keefe et al. discloses an ink jet print cartridge comprising a TAB circuit (18) which cover a printer cartridge headland (50). As can be seen in Fig. 6, the TAB circuit, having electrical contact pads (20), extends along the sides of the cartridge so that it is generally perpendicular to the substrate for the purpose of reducing the size of the printer cartridge. This would suggest to one having ordinary skill in the art at the time the invention was made that the TAB circuit disclosed in Wong could be extended along the sides of the ink cartridge for the purpose of reducing the size of the printer cartridge. Therefore, the TAB circuit would extend essentially perpendicular to the side of the substrate holder.

Therefore, it have been obvious to one having ordinary skill in the art at the time the invention was made to have provided in Wong at least one of sides of the substrate carrier having a substantially planar surface extending from the substrate surface essentially perpendicular there to for containing contact pads cartridge for the purpose of reducing the size of the printer cartridge.

16. Claims 33-35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wong in view of in view of Hara et al. and Keefe et al., as applied to claims 32, 38 and 39 above, and further in view of Fukuda et al.

Wong, as modified by Hara et al. and Keefe et al., discloses the claimed invention with the exception of the substrate holder comprising a metal selected from the group consisting of aluminum, beryllium, copper, gold, silver, zinc, tungsten and alloys of two or more of the foregoing metals.

Art Unit: 2853

Fukuda et al. discloses an ink jet print head comprising a heat sink (1) made of aluminum for the purpose of cooling a heat generating substrate (10) (col. 6, lines 10-18).

Therefore, it have been obvious to one having ordinary skill in the art at the time the invention was made to have provided in Wong a substrate holder comprising a metal selected from the group consisting of aluminum, beryllium, copper, gold, silver, zinc, tungsten and alloys of two or more of the foregoing metals for the purpose of cooling a heat generating substrate.

17. Claims 36 and 37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wong in view of in view of Hara et al. and Keefe et al., as applied to claims 32, 38 and 39 above, and further in view of Wenzel et al.

Wong, as modified by Hara et al. and Keefe et al., discloses the claimed invention with the exception of the coating of polyxylylene, the polyxylylene coating having a thickness of about 0.1 to 10 microns.

Wenzel et al. discloses an ink jet print head having a coating of polyxylylene with a thickness of between 0.5 and 5 microns for the purpose of forming a corrosion resistant layer.

Therefore, it have been obvious to one having ordinary skill in the art at the time the invention was made to have provided in Wong a polyxylylene coating having a thickness of about 0.1 to 10 microns for the purpose of forming a corrosion resistant layer as taught by Wenzel et al.

Art Unit: 2853

***Response to Arguments***

18. Applicant's arguments filed 03/27/2000 have been fully considered but they are not persuasive.

**Claims 1, 4, 5 and 10-12**

In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, the combination of Wong and Hara et al. teaches the claimed invention.

Applicant's argument that Wong does not teach using a fins for cooling a substrate is not persuasive. While it is true that Wong teaches using ink to cool the substrate, there is no teaching in Wong which would prevent cooling fins, such as taught by Hara et al., from being used to also cool the substrate.

Applicant's argument that the device taught by Hara et al. is totally different from the device taught by Wong is not persuasive. Hara et al. is cited only to show that it is known to use a heat sink having fins for the purpose of cooling a substrate in an ink jet print head. Wong teaches a substrate mounted in a substrate holder it would have been obvious to one of ordinary skill in the art to provide heat sink fins on the substrate

Art Unit: 2853

holder for the purpose of preventing overheating of the substrate. The other difference, such a Wong being a top shooter and Hara et al. being a side shooter are not seen as relevant, and the Applicant has not provided any explanation as to why they are relevant.

Applicant's argument that Wong does not teach coating the substrate holder with silicon dioxide is deemed to be addressed in the new grounds of rejection.

Applicant's argument that prior art does not teach the ink reservoir body being formed with the substrate holder is not persuasive. Applicant' has not provided any reason why it would not be obvious to modify the structure of Wong into an integral structure.

Applicant's argument that the '421 patent cannot be used because it describes using a Peltier cooler, the heat discharging fin, and a fan is not persuasive. The language of the claim does not limit the invention to only a heat discharging fin. Therefore, the structure taught by Hara et al. meets the claimed language. Also, the heat discharging fin would function to discharge heat by itself. The Peltier cooler and the fan are provided to improve heat discharging efficiency.

### **Claims 2 and 3**

Applicant's argument that Wong teaches away from the use of a metal heat sink is not persuasive. In support of this position, the Applicant relies on the language found in Wong which states that "the attachment of a metal heat sink adjacent to the resistor



Art Unit: 2853

assembly in the cartridge... has proven to be impractical..." Therefore, Wong recognizes that it is known in the art to use a heat sink, but recognizes certain deficiencies and attempts to overcome them. This does not mean that the structure taught by Wong could not be modified with heat discharging fins. In the above rejection Wong is only being cited to teach the structure of the substrate holder and Hara et al. is being used to teach the heat discharging fins. It would have been obvious to Modify the structure taught by Wong with heat discharging fins for the purpose of dissipating heat in a known alternative manner.

#### **Claims 6 and 7**

These claims are deemed to be addressed in the new grounds of rejection.

#### **Claim 8**

The arguments against this claim are addressed above.

#### **Claim 9**

Applicant's argument that Cook cannot be combined with the other references since it does not teach an ink jet print head are not persuasive. Cook teaches a heat sink comprising a metal matrix with a ceramic for the purpose of providing a heat sink with improved thermal conductivity so as to reduce its size. It would be obvious to substitute a metal-ceramic heat sink for the structure taught by Wong and Hara et al. for the purpose of reducing the heat sink size. The advantages of having a heat sink with

Art Unit: 2853

reduced size are recognized in the ink jet art since it is desirable to reduce the size of the print head.

**Claim 13**

Deemed to be addressed in the new grounds of rejection

**Claims 14-22 and 24, 17, 18 and 24**

See discussion of the Claims 1-8, above.

**Claims 25-28 and 31**

See above discussion of Claims 1-5 and 10-12. Also, Applicant's argument that the Office Action did not address a plurality of slots is deemed to be addressed in the new grounds of rejection.

**Claim 30**

See discussion of Claims 6, 7, 19, 20, and 25.

**Claims 32, 38 and 39**

See discussion of Claims 1, 14 and 25. Applicant's argument that the prior art does not teach a metal substrate carrier having four sides wherein at least two of the sides contain cooling fins and wherein the carrier contains notches for removably

Art Unit: 2853

attaching an ink reservoir to the carrier is not persuasive. Applicant does not provide any arguments as to why it would not have been obvious to provide additional cooling fins on different sides of the substrate carrier. Applicant also argues that the prior art does not teach notches for removably attaching an ink reservoir to the carrier.

However, Wong teaches the cylindrical holes (100) and alignment pins which attach the carrier to the ink cartridge body. Therefore, Wong meets the limitation as claimed.

#### **Claims 33-35**

See discussion of Claims 2-3, 15-16 and 26.

#### **Claims 36 and 37**

See discussion of Claims 6, 7, 19, 20 and 30.

### ***Conclusion***

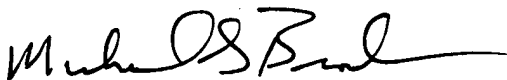
19. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Braun (4,942,408) teaches an ink jet print head comprising a substrate which is mounted into a recess formed in a mounting structure (see Fig. 3A for example).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael S. Brooke whose telephone number is 703-305-0262. The examiner can normally be reached on 6:30-300 M-F.

Art Unit: 2853

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John E. Barlow can be reached on 308-3126. The fax phone numbers for the organization where this application or proceeding is assigned are 703-305-3431 for regular communications and 703-305-3431 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.



Michael S. Brooke  
May 2, 2000



N. Le  
Supervisory Patent Examiner  
Technology Center 2800